

Weather

Notes

Learning Objective: In writing, SWBAT describe an air mass, and compare and contrast warm and cold fronts using academic language, in order to understand how weather works.

<https://www.brainpop.com/science/weather/weather/>

Weather

the condition of the atmosphere at a specific time and place

Weather report

gives information about the weather for the next few days

Where to get a weather report

- TV
- internet
- radio
- newspaper

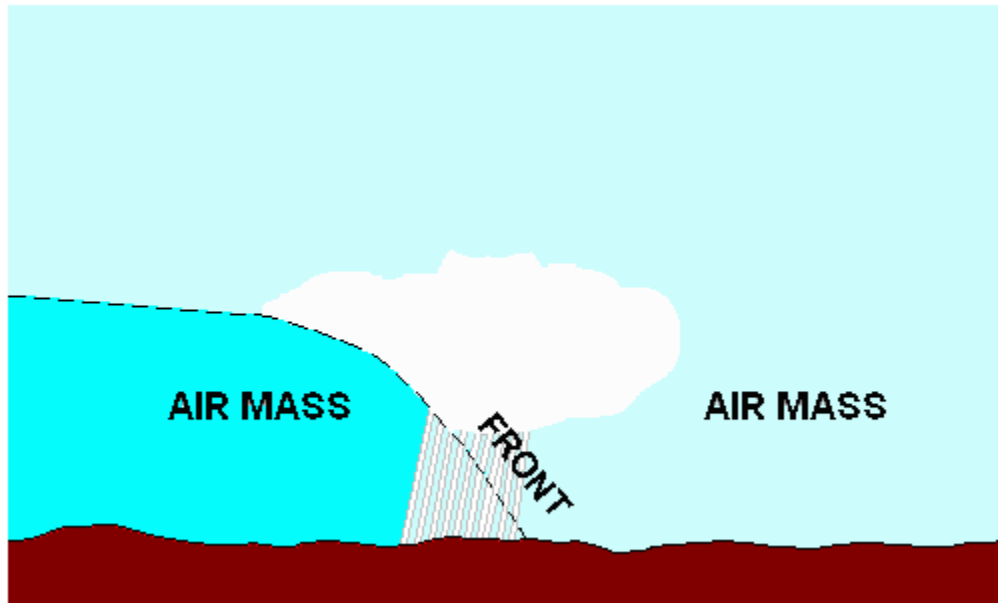
Air mass

a large area of air that has the same temperature and amount of moisture

An air mass has the same characteristics as the area it covers

Front

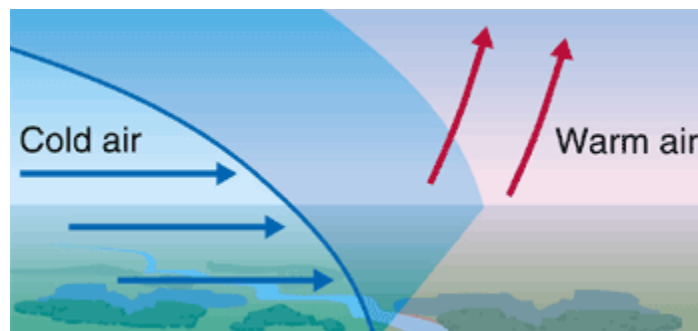
the boundary between two air masses



Cold front

where a cold air mass pushes under a warm air mass

The warm air mass is forced upward



http://www.mesoscale.iastate.edu/agron206/animations/05_cnWfronts.html

http://www.classzone.com/books/earth_science/terc/content/visualizations/es2002/es2002page01.cfm?chapter_no=visualization

http://www.phschool.com/atschool/phsciexp/active_art/weather_fronts/

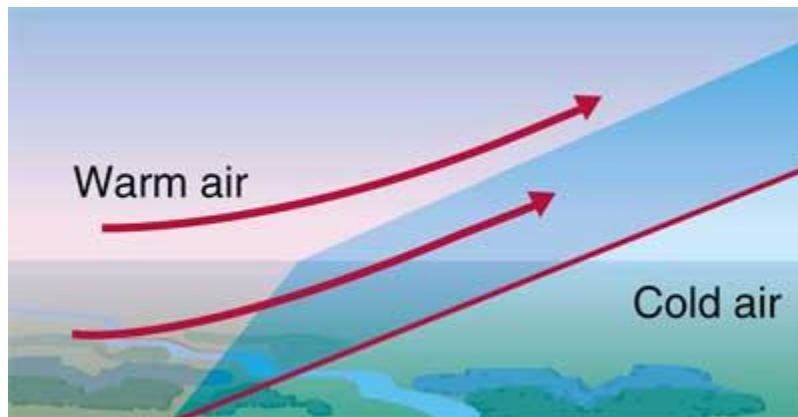
Cold fronts usually bring cloudy skies and precipitation

Symbol for cold front



Warm front

where a warm air mass moves over a cold air mass



<http://www.mesoscale.iastate.edu/agron206/animations/05cnWfronts.html>

http://www.classzone.com/books/earth_science/terc/content/visualizations/es2002/es2002page01.cfm?chapter_no=visualization

http://www.phschool.com/atschool/phsciexp/active_art/weather_fronts/

Warm fronts usually bring warmer temperatures and light to medium rain

Symbol for warm front





Learning Objective: In writing, SWBAT explain what a cloud is, and list and describe different types of precipitation, using academic language, in order to understand how weather works.

Humidity

the amount of water vapor in the air

Cloud

a group of millions of tiny water droplets in the air

Wind

air that moves in a specific direction

Precipitation

liquid or solid water that falls from the clouds

Types of precipitation

- rain
- sleet
- snow
- hail

Rain

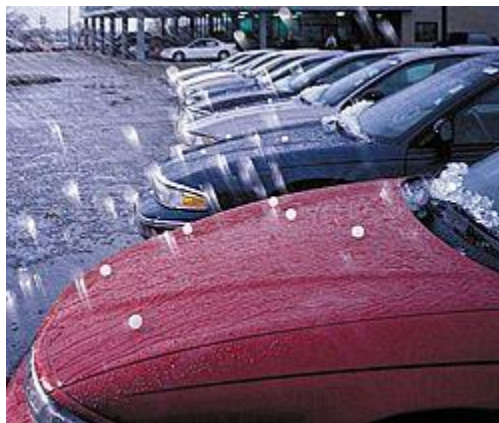
drops of water that fall from the clouds

Snow

frozen water that falls from the clouds

Hail

small balls of ice that fall from the clouds

**Fog**

a cloud on or near the ground



Temperature

a measure of how hot or cold something is

Weather and Climate **Check Your Understanding**

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1. What are three forms of precipitation in the pictures?

Three forms of precipitation in the pictures are _____, _____ and _____.

2. According to the weather report, what is bringing rain and hail into the area?

According to the weather report, a _____, followed by a _____, is bringing rain and hail into the area.

3. What does a weather report tell you?

A weather report tells you _____.

4. Look at the weather report. What do you think the weather will be like in the afternoon if the cold front does **not** move in?

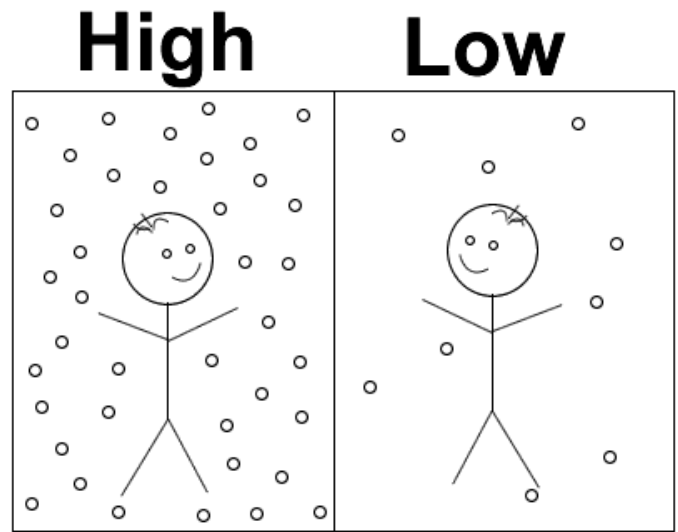
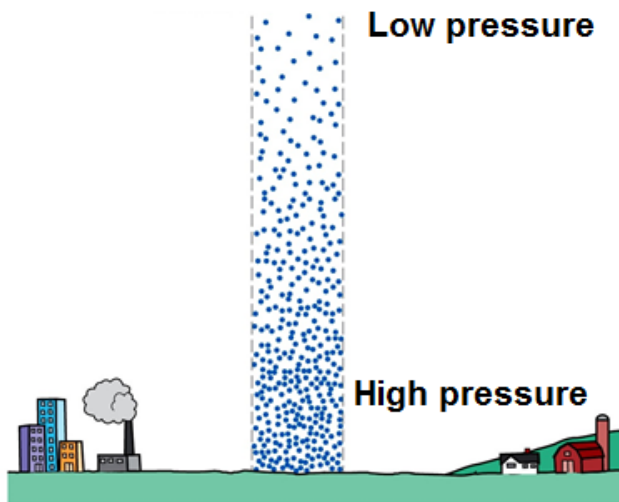
If the cold front does not move in, the weather in the afternoon will be _____ and _____.

Learning Objective:

In writing, SWBAT compare and contrast high and low pressure and describe what kind of weather each one brings, using academic language, in order to better understand how weather works.

Atmospheric pressure

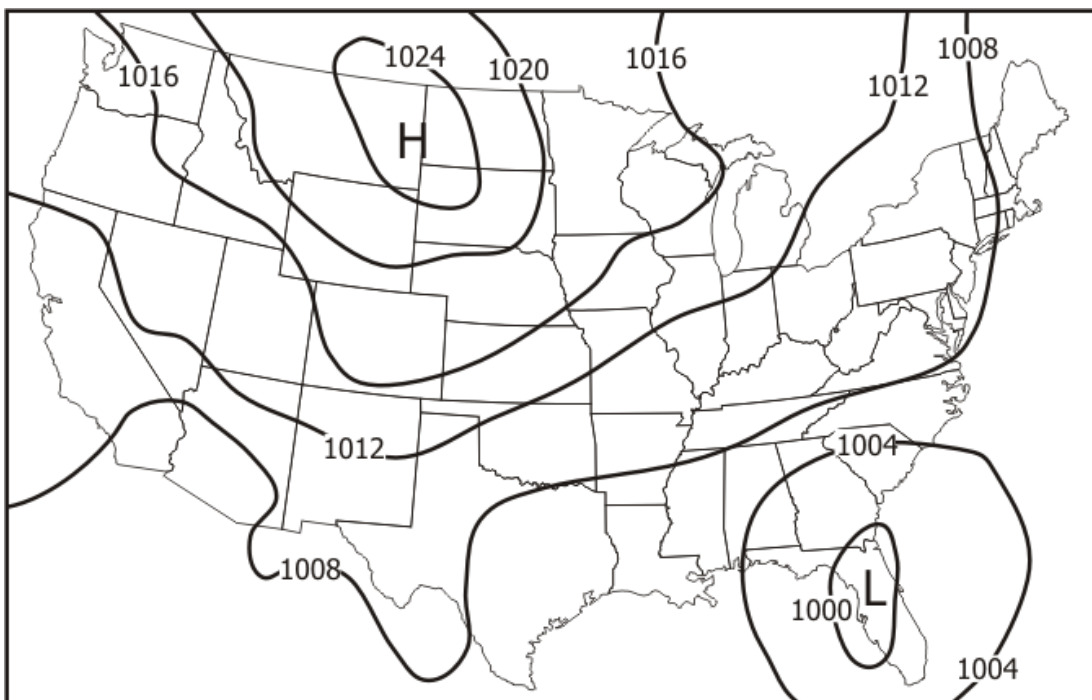
the weight of air over a specific area



Air Pressure

Isobars

lines that connect areas with the same air pressure



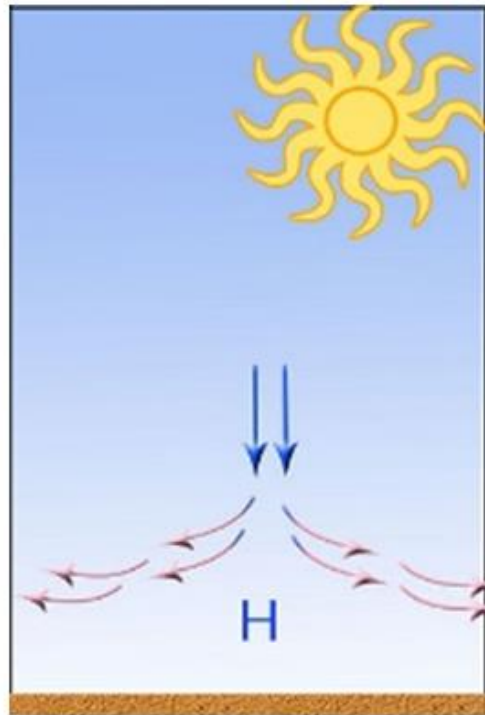
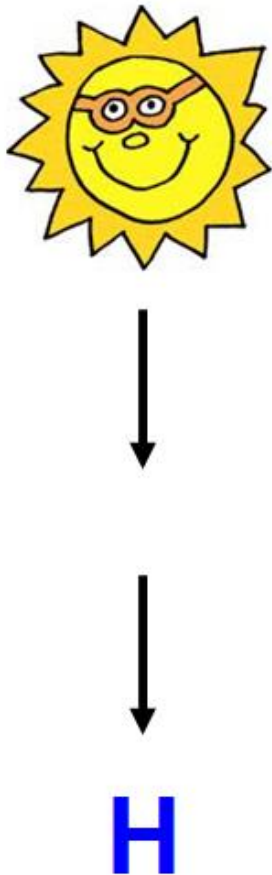
Air temperature
and density

cold air = more dense
warm air = less dense

High pressure area

area where cold air is sinking

High pressure areas usually mean
clear, sunny skies because sinking
air makes it difficult for clouds to
form

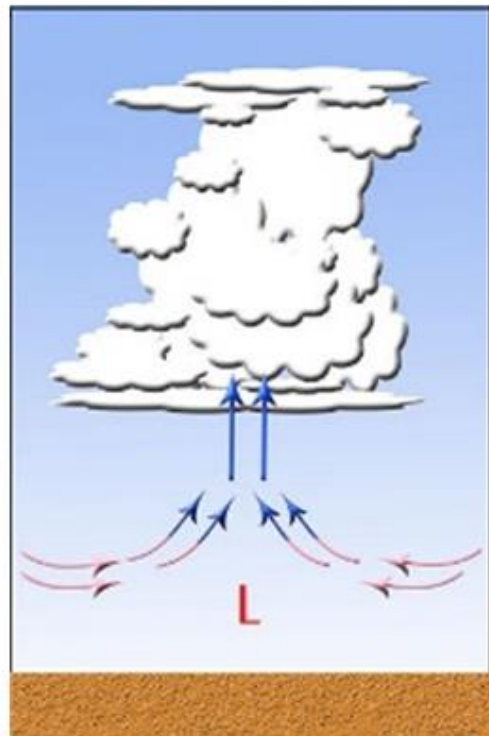
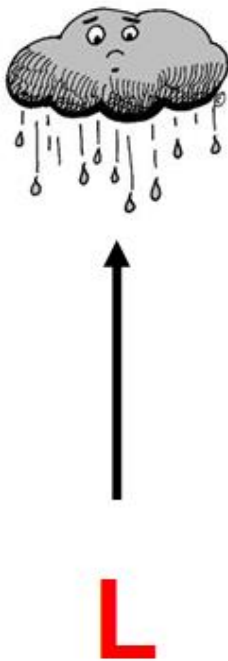


<http://www.juicygeography.co.uk/downloads/flash/highpressure.swf>

Low pressure area

area where warm air is rising

Low pressure areas usually bring cloudy skies and precipitation, because air cools as it rises, forming clouds



<http://www.juicygeography.co.uk/downloads/flash/lowpressure.swf>

What causes wind

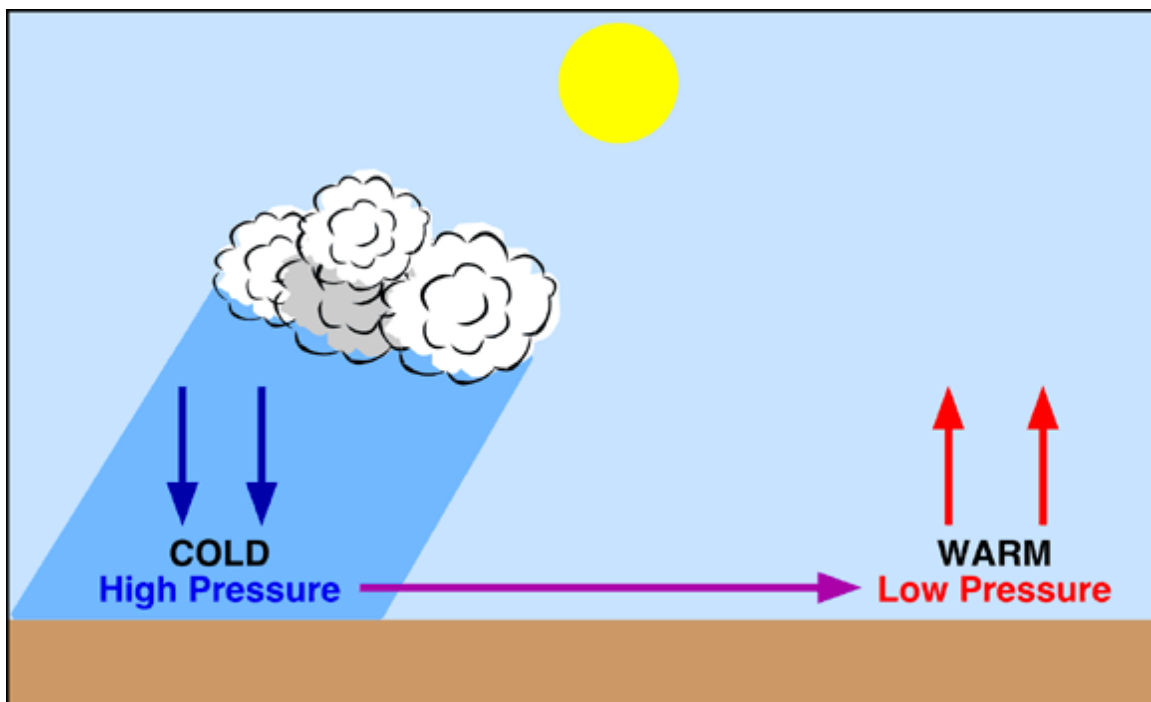
differences in air pressure at Earth's surface

Earth's surface is heated unevenly by the sun

Areas that receive more of the sun's energy are warmer and have low pressure

Areas that receive less of the sun's energy are colder and have high pressure

Wind is created because air always moves from high pressure to low pressure



http://www.mesoscale.iastate.edu/agron206/animations/12_CycAntiCyc.swf

<https://www.brainpop.com/science/forcesofnature/wind/>

Weather Science Skill

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1. How many areas have high pressure? How many areas have low pressure?

_____ areas have high pressure, and _____ areas have low pressure.

2. If you live in Miami, Florida, will you be able to go on a picnic today? Explain.

If you live in Miami, Florida, you _____ be able to go on a picnic today because it will be _____ .

How clouds form

1. Warm, moist air rises
2. It expands and becomes cooler
3. Tiny drops of water form
4. Drops of water collect around particles of dust or salt

5. Millions of particles come together to form a cloud

https://www.youtube.com/watch?v=QC2x_RRnk8E

<https://www.brainpop.com/science/weather/clouds/>

Classifying clouds

clouds are classified by shape and height

Clouds classified by shape

- stratus
- cumulus
- cirrus

Stratus clouds

form layers like smooth, even sheets in the sky

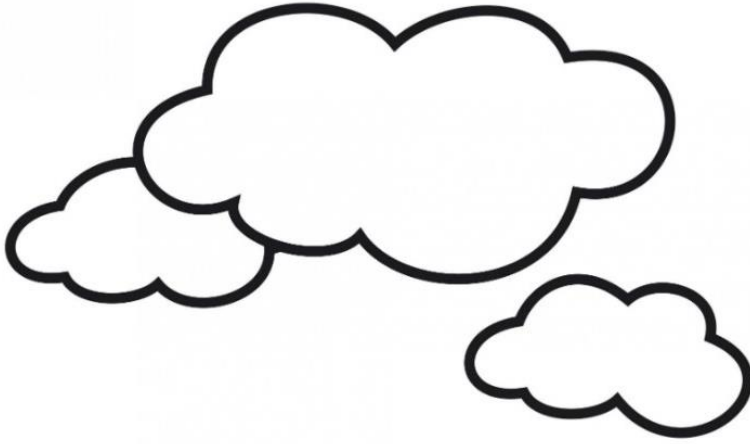
They usually form at low altitudes



Cumulus clouds

are thick, puffy and white

They can be very tall and sometimes have flat bottoms



Cirrus clouds

are thin, white, feathery and curly

They are usually made of ice crystals and form high in the atmosphere



Prefixes for cloud height

- cirro*- high clouds
- alto*- middle clouds
- strato*- low clouds

Nimbus clouds

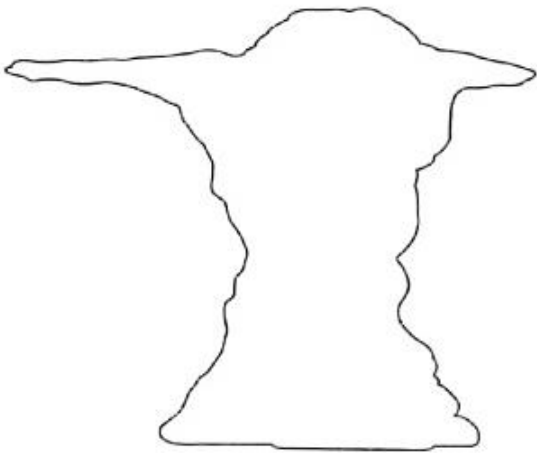
dark rain clouds

Examples:

- cumulonimbus
- nimbostratus

Cumulonimbus cloud

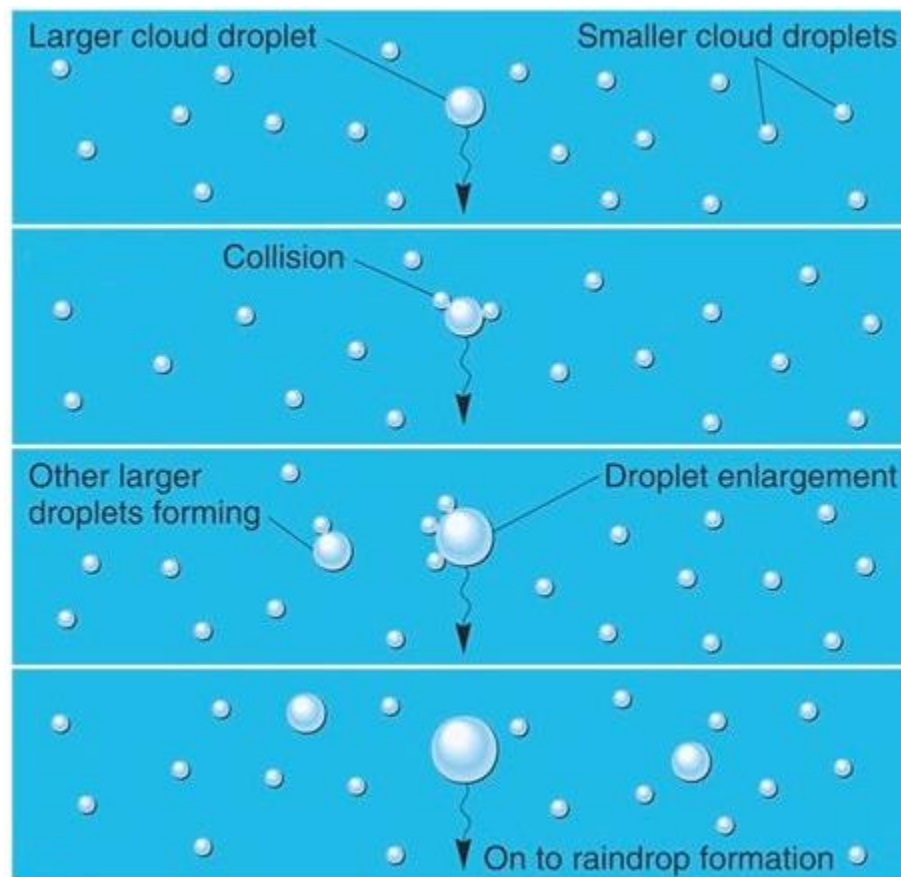
a tall, thick cloud usually related to thunderstorms



How rain forms

1. Inside a cloud, drops of water bump into each other
2. The drops of water stick together to form larger drops

3. Gravity pulls on the drops of water when they become big enough
4. The drops of water fall to Earth as rain



Weather

Check Your Understanding

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1. What do isobars on a weather map represent?

Isobars on a weather map are _____.

2. When does a raindrop fall to Earth?

A raindrop falls to Earth when _____ .

3. What causes wind?

Wind is caused by _____ .

4. What is the relationship between air temperature and density?

The relationship between air temperature and density is _____ air is _____ dense and _____ air is _____ dense.